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10/501,767	02/24/2005	Stefan Lindberg	1501-1260	2938
466	7590	04/04/2006	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			SUAREZ, FELIX E	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,767	<b>Applicant(s)</b> LINDBERG ET AL.	
	<b>Examiner</b> Felix E. Suarez	<b>Art Unit</b> 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19, 22, 23, 31, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 20, 21, 24-30, 32 and 35-44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>19 Jul 2004</u> . | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Minor Informalities***

1. The disclosure is objected to because of the following informalities:

In page 49 line 33 of the specification, phrase "1006250 mm<sup>2</sup>" should be --1006250 mm<sup>3</sup>--.

In page 50 lines 1-2 of the specification, phrase "800000 mm<sup>2</sup>" should be --800000 mm<sup>3</sup>--.

In claim 25 page 8 line 2, phrase "1006250 mm<sup>2</sup>" should be --1006250 mm<sup>3</sup>--.

In claim 27 page 8 lines 10-11, phrase "800000 mm<sup>2</sup>" should be --800000 mm<sup>3</sup>--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 6, 8-19, 22, 33 and 34 are rejected under 35

U.S.C. 102(b) as being unpatentable over Discenzo (U.S. Patent No. 6,326,758).

With respect to claim 1, Discenzo teaches an apparatus for analysing the condition of a machine having a rotating shaft, comprising:

at least one input for receiving measurement data from a sensor for surveying a measuring point of the machine (see col. 4, lines 55-66); said measurement data being dependent on rotation of said shaft (see col. 8, lines 16-24);

data processing means for processing condition data dependent on said measurement data; said data processing means comprising means for performing a plurality of condition monitoring functions (see col. 8, lines 57-66), wherein

said data processing means includes a Field Programmable Gate Array circuit coupled to said at least one input (see col. 14, lines 60-67).

With respect to claim 2, Discenzo further teaches:

said data processing means comprises at least two data processing devices co-operating so as to control operation of said condition analysis apparatus; a first one of said data processing devices being said Field Programmable Gate Array circuit (see col. 14, lines 52-67).

With respect to claim 3, Discenzo further teaches:

a second one of said data processing devices operates to control the operation of the Field Programmable Gate Array circuit (see col. 14, lines 52-67).

With respect to claim 6, Discenzo further teaches:

said Field Programmable Gate Array circuit (50B) is programmable to execute said plurality of condition monitoring functions (see col. 14, lines 60-67).

With respect to claim 8, Discenzo further teaches:

at least one of said condition monitoring functions generates said condition data in response to measurement data indicative of vibration (see col. 4, lines 60-66).

With respect to claim 9, Discenzo further teaches:

said at least one input includes an input adapted to receive shock pulse measurement data; said adapted input comprising means for treatment of said shock pulse measurement data and delivery of said treated data to said data processing means(see col. 14, lines 41-44) .

With respect to claim 10, Discenzo further teaches:

at least one of said condition monitoring functions, when running, generates said condition data in response to measurement data indicative of temperature (see col. 4, lines 60-66).

With respect to claim 11, Discenzo further teaches:

said at least one input includes an input adapted to receive measurement data indicative of temperature; said adapted input comprising means for treatment of said temperature measurement data and delivery of said treated data to said data processing means (see col. 6, lines 9-21).

With respect to claim 12, Discenzo further teaches:

said at least one input includes an input adapted to receive an analogue measurement signal indicative of temperature (see col. 4, lines 55-66); said apparatus further comprising

an A/D-converter, which is coupled to receive said analogue temperature measurement signal (see col. 14, lines 48-52); and wherein

said Field Programmable Gate Array circuit is coupled to receive digital temperature data from said A/D-converter (see col. 14, lines 64-67).

With respect to claim 13, Discenzo further teaches:

said at least one input includes at least one analogue-to-digital converter coupled so as to enable reception of an analogue signal and delivery of a corresponding digital signal to said data processing means (see col. 14, lines 48-52).

With respect to claim 14, Discenzo further teaches:

said at least one input includes an input adapted to receive binary tachometering measurement signals (see col. 6, lines 9-15; col. 10, lines 15-29; the Examiner considers that, velocity is equal to a tachometer measurement signal).

With respect to claim 15, Discenzo further teaches:

said at least one input for receiving measurement data comprises a plurality of inputs coupled to said Field Programmable Gate Array circuit (see col. 14 line 64 to col. 15 line 11).

With respect to claim 16, Discenzo further teaches:

said plurality of inputs comprises two or three or more types of inputs (see col. 16, lines 51-57) selected from the group consisting of shock pulse measurement signal input (see col. 14, lines 41-44), temperature signal input (see col. 4, lines 55-66), vibration measurement signal input (see col. 4, lines 55-66), tachometering measurement signal input (see col. 6, lines 9-15 and col. 10, lines 15-29).

With respect to claim 17, Discenzo further teaches:

said plurality of condition monitoring functions (F1, F2,Fn) includes two or three or more functions selected from the group consisting of:

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vibration analysis (see col. 7, lines 42-52),

temperature analysis (see col. 6, lines 11-15 and col. 8, lines 58-66),

shock pulse measuring (see col. 14, lines 41-44),

spectrum analysis of shock pulse measurement data (see col. 7, lines 4-15),

Fast Fourier Transformation of vibration measurement data (see col. 7, lines 38-47 and col. 14, lines 44-48),

graphical presentation of condition data on a user interface (see col. 7, lines 4-15),

tachometering (see col. 6, lines 9-15 and col. 10, lines 15-29),

imbalance detection (see col. 7, lines 56-58).

With respect to claim 18, Discenzo further teaches:

said plurality of condition monitoring functions (F1, F2,Fn) includes a function for imbalance detection (see col. 7, lines 56-58).

With respect to claim 19, Discenzo further teaches:

said plurality of condition monitoring functions (F1, F2,Fn) includes a function for balancing (see col. 7, lines 56-58).



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With respect to claim 22, Discenzo further teaches:

at least one of said plurality of condition monitoring functions has an enabled state and a disabled state (see col. 8, lines 61-66 and col. 10, lines 55-58).

With respect to claim 33, Discenzo further teaches:

at least one of said plurality of condition monitoring functions has an enabled state and a disabled state (see col. 8, lines 61-66 and col. 10, lines 55-58).

With respect to claim 34, Discenzo further teaches:

all or several of said plurality of condition monitoring functions have an enabled state and a disabled state such that each of said all or several condition monitoring functions can be individually enabled or disabled (see col. 8, lines 61-66 and col. 10, lines 55-58).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4, 5, 7 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Discenzo (U.S. Patent No. 6,326,758) in view of Blemel (U.S. Patent No. 6,938,177).

With respect to claim 4, Discenzo teaches all the features of the claimed invention, except that Discenzo does not teach comprising:

a plurality of memory segments for storing program code; and  
program code means, stored on at least one of said memory segments, which when run on said Field Programmable Gate Array circuit (50B) causes the condition analysis apparatus to execute a condition monitoring function.

But Blemel teaches that, a Field Programmable Gate Array (FPGA) has the ability to be reprogrammed from non-volatile memory, by the microcontroller, or through a serial port. This enables the parallel activities of the FPGA to be constructed on the fly and personalized with a variety of unique programs and data, such as serial codes, calibration coefficients, or a reduced traveler containing process history. Accordingly, the FPGA has the ability to be dynamically configured as a processor with extended mathematical or logical precision (see Blemel; col. 8, lines 5-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Discenzo to include a FPGA as taught by Blemel, because the FPGA allows to construct and personalize a variety of

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unique programs and data, such as serial codes; and the FPGA is configured to monitor analog signal functions (see Blemel; col. 8, lines 16-31), as desired.

With respect to claim 5, Discenzo teaches all the features of the claimed invention, except that Discenzo does not teach comprising:

program code means, stored on at least one of said memory segments, which when run on said second data processing device causes the second data processing device to control the operation of the Field Programmable Gate Array.

But Blemel teaches that, a Field Programmable Gate Array (FPGA) has the ability to be reprogrammed from non-volatile memory, by the microcontroller, or through a serial port. This enables the parallel activities of the FPGA to be constructed on the fly and personalized with a variety of unique programs and data, such as serial codes (see Blemel; col. 8, lines 5-15).

Blemel also teaches that, the FPGA operates either under control of a microprocessor or, can be operated independently. The FPGA provides the ability to use internal parallel processing (see Blemel; col. 7, lines 41-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Discenzo to include a FPGA as taught by Blemel, because the FPGA allows to operates either under control of a microprocessor or, can be operated independently, as desired.

With respect to claim 7, Discenzo teaches all the features of the claimed invention, except that Discenzo does not teach:

at least some of said plurality of condition monitoring functions are at least partly embodied by computer program code.

But Blemel teaches that, a multi-chip module smart controller supports the following types of functionality: (1) in-situ reprogramming of the microprocessor's operational software (program code); (2) in-situ reprogrammation of the FPGA's operational software programs with adaptive parallel program codes, (3) individualization of the serial codes, embedded descriptions of design specification, past history, maintenance, etc. (see Blemel; col. 3, lines 12-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Discenzo to include a multi-chip module smart controller as taught by Blemel, because the multi-chip module smart controller allows to monitor functions embodied by computer program code, as desired.

With respect to claim 31, Discenzo teaches all the features of the claimed invention, except that Discenzo does not teach:

a logger for registering use of at least one of said condition monitoring functions.

But Blemel teaches that, the non-volatile storage also allows serialization, for specific calibration parameter storage, and for history-depending operations such as data logging (see Blemel; col. 6, lines 54-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Discenzo to include a non-volatile storage as taught by Blemel, because non-volatile storage of Blemel allows a history-depending operations such as data logging, as desired.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Discenzo (U.S. Patent No. 6,326,758) in view of Piety et al. (U.S. Patent No. 6,078,874).

With respect to claim 23, Discenzo teaches all the features of the claimed invention, Discenzo teaches:

an apparatus body (see col. 4, lines 51-60);

Discenzo does not teach

a display provided on, at or in, said apparatus body.

But Piety et al. (hereafter Piety) teaches in an apparatus for a machine data collection a user interface in the form of a liquid crystal display (LCD). The LCD is an one-line character matrix in electrical communication with the data acquisition engine to display a variety of information to the operator (see Piety; col. 7, lines 25-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Discenzo to include a user interface in the form of a LCD as taught by Blemel, because a user interface in the form of a LCD includes a display, as desired.

#### ***Allowable Subject Matter***

5. Claims 20, 21, 24-30, 32, 35-44, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Claims 20 and 21, would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said plurality of condition monitoring functions includes a function for misalignment detection.

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Claims 24 and 26 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said display has a display area of at least  $4125 \text{ mm}^2$  ( $4800 \text{ mm}^2$ ).

Claims 25 and 27 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said apparatus body has a body volume of less than  $1006250 \text{ mm}^3$  ( $800000 \text{ mm}^3$ ).

Claim 28 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said apparatus body is shaped and adapted to enable a one-hand grip.

Claim 29 and 30 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said apparatus body is houses readable and writeable memory means having a storage capacity exceeding 8 megabits ( $240 \text{ megabits}$ ).

Claim 32 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said apparatus is adapted to be capable of delivering data indicative of said registered use on said communication port.

Claim 35 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

means for comparing said registered use with a first reference value

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Claims 36 and 38 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

key reception means adapted to allow further use of said data processing means in response to reception of a first key

Claim 37 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

key reception means adapted to allow further use of a selected one of said condition monitoring functions (F1, F2,Fn) in response to reception of a key associated with said selected function.

Claim 39 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

a user interface for allowing an operator to indicate a desire to execute a condition monitoring function

Claims 40-42 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said logger is adapted to register use of a second condition monitoring function at a second rate.

Claim 43 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said registered use is a parameter indicative of a number of executions of at least one of said condition monitoring functions.



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Claim 44 would be allowable over the prior art for at least the reason that the prior art fail to teach or suggest that:

said registered use is a parameter indicative of an extent of time.

**Conclusion**

**Prior Art**

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Slates [U.S. Patent No. 6,346,807] describes a rotating shaft monitoring.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felix Suarez, whose telephone number is (571) 272-2223. The examiner can normally be reached on weekdays from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on (571) 272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications.

March 23, 2006

F.S.

  
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